

R E M A R K S

**I. Introduction**

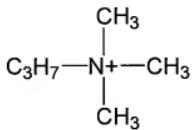
For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

**II. The Rejection Of Claims 1-3 and 5-9 Under 35 U.S.C. § 102**

Claims 1-3 and 5-9 were rejected under 35 U.S.C. § 102(b) as being anticipated by Chu May-Ying (WO 96/16450). Applicants respectfully submit that Chu May-Ying fails to anticipate the pending claims for at least the following reasons.

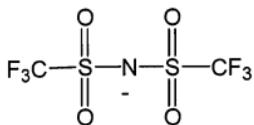
With regard to the present subject matter, claim 1 recites a non-aqueous electrolyte secondary battery comprising a positive electrode, a negative electrode, and a liquid non-aqueous electrolyte, wherein said positive electrode includes elemental sulfur, and said negative electrode includes silicon that stores lithium; and said liquid non-aqueous electrolyte includes a quaternary ammonium salt.

One feature of the present disclosure is that the non-aqueous electrolyte of the secondary battery includes a quaternary ammonium salt. Quaternary ammonium salts are well-known and well-defined chemical compounds. A quaternary ammonium salt comprises a positively charged nitrogen atom covalently bonded to four alkyl groups. The positively charged nitrogen atom has a negatively charged counter-ion in association with it. Specific examples of quaternary ammonium salts are found in the present specification and claims. For example, the trimethylpropylammonium (quaternary salt) portion of trimethypropylammonium bis(trifluoromethylsulfonyl)imide used as the liquid non-aqueous electrolyte in the present disclosure has the chemical structure shown below:



Note the positively charged nitrogen atom in the center of four alkyl substituents (three methyl groups and one propyl group).

Imide groups are different than quaternary ammonium groups. An imide group is a negatively charged nitrogen-containing acid bonded to two substituents. To take the same example used as the liquid non-aqueous electrolyte in the present specification, the (trifluoromethylsulfonyl)imide (imide) portion of trimethylpropylammonium bis(trifluoromethylsulfonyl)imide has a structure as follows:



Note the negative charge on the nitrogen atom and the bonding to only two different groups. As can be seen, the present disclosure teaches a liquid non-aqueous electrolyte that includes a quaternary ammonium salt which has, as its counter-ion, an imide group.

In contrast to the present disclosure, Chu May-Ying teaches only an imide group. While Chu May-Ying teaches the same *imide* group as in the present disclosure, Chu May-Ying fails to disclose a liquid non-aqueous electrolyte that includes a *quaternary ammonium salt*. As such, it is clear that Chu May-Ying does not teach or suggest each and every element of claim 1 of the present disclosure.

Anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983). At a minimum, Chu May-Ying does not disclose a non-aqueous electrolyte secondary battery comprising a positive electrode, a negative electrode, and a liquid non-aqueous electrolyte, wherein said positive electrode includes elemental sulfur, and said negative electrode includes silicon that stores lithium; and said liquid non-aqueous electrolyte includes a quaternary ammonium salt. As such, it is clear that Chu May-Ying does not anticipate claim 1, or any claims dependent thereon. Accordingly, as all rejections of claim 1 have been addressed, Applicants submit that claim 1 is patentable over the prior art and respectfully request that the § 102 rejection of claim 1 be withdrawn.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

**IV. Conclusion**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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